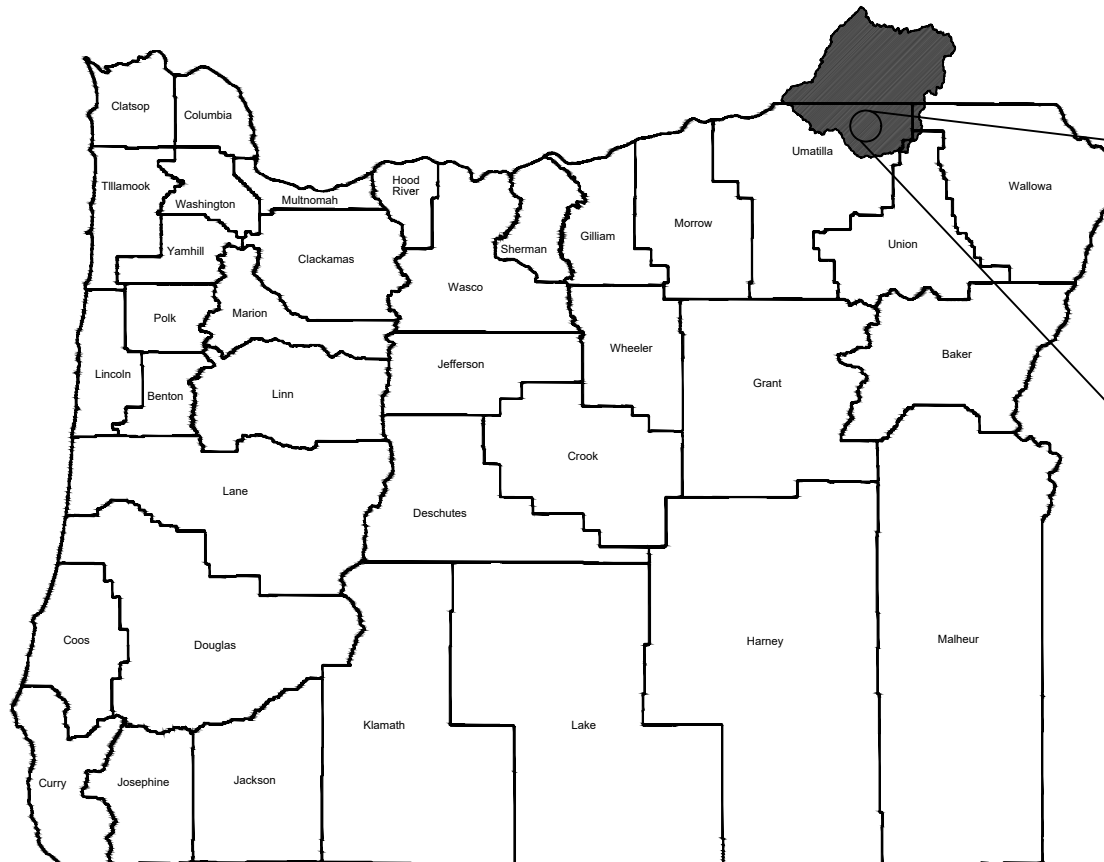


Review and Acceptance

I have reviewed the drawings and construction specifications provided and find them to be acceptable for installation. I also acknowledge that any modifications shall be approved by the Engineer prior to installation. I also acknowledge that I have received a copy of this plan.

Owner

Date



MILLER ROAD AQUIFER RECHARGE SITE

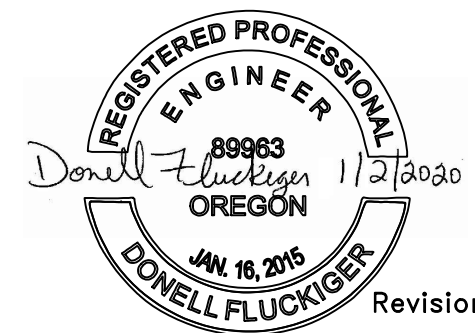
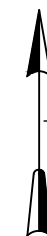
CONSTRUCTION NOTES

1. Installation shall be in accordance with these plans. Details of construction shown on the drawings, but not included herein, shall be considered as part of these specifications. Construction activities shall be in accordance with Department of Labor, Occupational Safety and Health Administration (OSHA) regulations.
2. The foundation area will be cleared of all roots, brush, sod and debris. Any over-excavation will be backfilled with select material and compacted to the density of the surrounding material. Structures shall be placed on a firm foundation. Unsuitable materials shall be removed.
3. Pipe shall be of the type, size and pressure rating shown on the drawings and shall meet the requirements of the appropriate material specifications.
4. Installation shall be in accordance with manufacturer's recommendations unless otherwise specified.
5. The pressure rating of fittings shall meet or exceed the strength requirements of the pipe. All fittings shall be of a material that is recommended for use with the type of pipe that is specified in D 1785, D 2241, D 2672 or D 2740 for Polyvinyl Chloride (PVC).
6. Solvents for solvent-welded plastic pipe joints shall conform to one of the following ASTM specifications as appropriate: D 2235, D 2564, or D 2855. Rubber joints for pipe joints shall conform to ASTM F 477, Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
7. Do not disturb the monitoring well seal. Do not operate machinery within 2' of well.
8. The pipe trench shall be excavated at the required location and depth as shown on the drawings and/or staked in the field. The bottom of the trench shall be reasonably smooth so that pipe will be properly supported.
9. Trenches for pipelines shall be free of rocks and other sharp edged materials. Plastic pipe shall be placed in a "snake" like position. Semi-rigid pipe may require expansion joint couplers.
10. Pipelines shall be placed so they are protected against hazards imposed by traffic, farm operations, freezing temperatures or soil cracking.

OPERATION AND MAINTENANCE

The life of the structure can be assured and usually increased by developing and carrying out a good operation and maintenance program. Observation of the system should be made periodically (monthly suggested) and the pipeline should be flushed as need. Also good operation and maintenance includes:

- Promptly repair or replace damaged components.
- Eradicate or otherwise remove all rodents or burrowing animals. Immediately repair any damage caused by their activity.
- Remove all foreign debris and trash that hinders system operation.
- Make sure all structure drains are functional and soil is not being transported through the drainage system. The screens and/or rodent guards shall also be kept in place.
- If settlement is present, investigate the cause and design repairs accordingly.
- Avoid travel by heavy equipment over pipelines when the soil is saturated except at designed crossings. Avoid travel over pipelines by tillage equipment when the soil is saturated. Limit traffic to sections that were designed for traffic loads.
- Avoid any subsoiling operation that may disturb the pipe.
- Use butterfly valve downstream from flow meter to adjust flow as needed.
- Owner chose to not install a screen or flush chamber. If pipe gallery pipe is plugged, excavate to the plug at the end of the gallery pipe and remove the plug to flush the system.

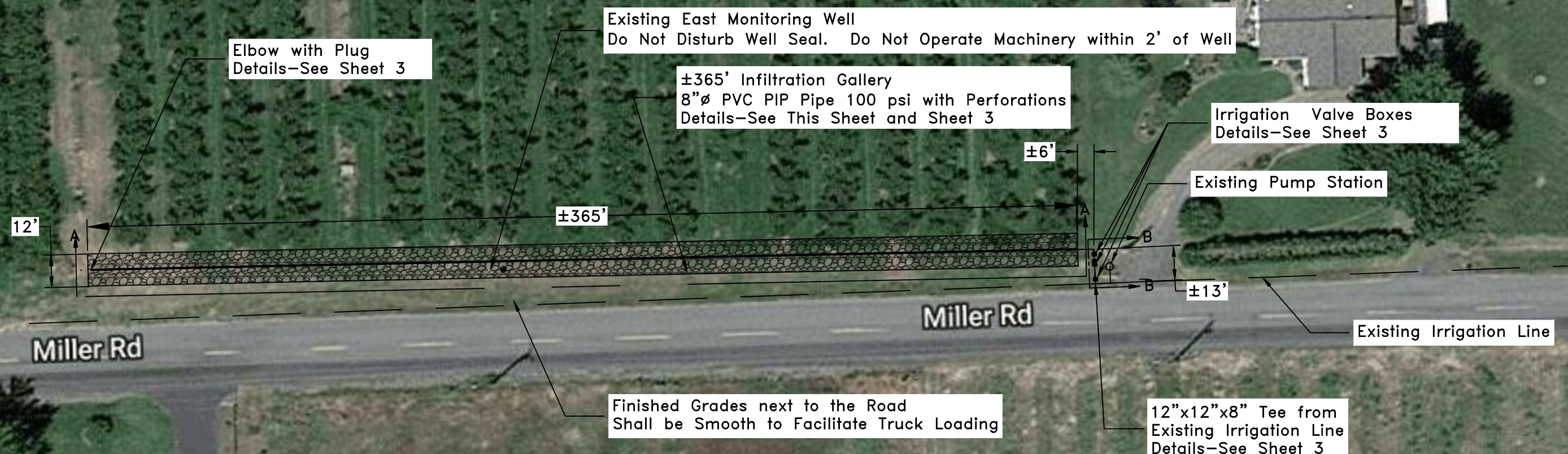


EXPIRES: 12/31/2021

Revision 1



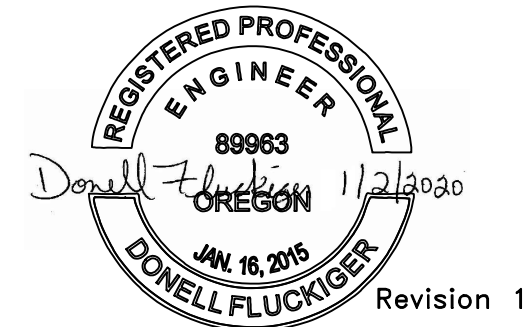
MILLER ROAD AQUIFER RECHARGE SITE—SHEET 2 OF 4



Water Recharge Estimated Flow (Assumes pipe is level)					
Lateral Perforated Pipe Size (in)	8	8	8	8	8
Lateral Perforated Length (ft)	360	360	360	360	360
Orifice Spacing (in)	48	48	48	48	48
Orifices	90	90	90	90	90
Orifice Diameter (in)	0.375	0.375	0.375	0.375	0.375
Head (ft)	25	30	35	40	45
Average Orifice Flowrate (gpm)	7.60	8.32	8.99	9.61	10.19
Variation (gpm)	0.14	0.15	0.16	0.17	0.18
Total Discharge (gpm)	684	749	809	865	917
Total Discharge (cfs)	1.5	1.7	1.8	1.9	2.0

*Typical Cd value of 0.61 reduced to 0.55 assuming 10% hole plug factor

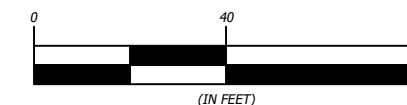
Recharge Cross-Section Sizing	
saturated hydraulic conductivity	141 $\mu\text{m/s}$
saturated hydraulic conductivity	40.0 fpd
saturated hydraulic conductivity	0.0005 fps
recharge flow	2.0 cfs
recharge flow	917 gpm
recharge length	365 ft
minimum cross-section width	12 ft



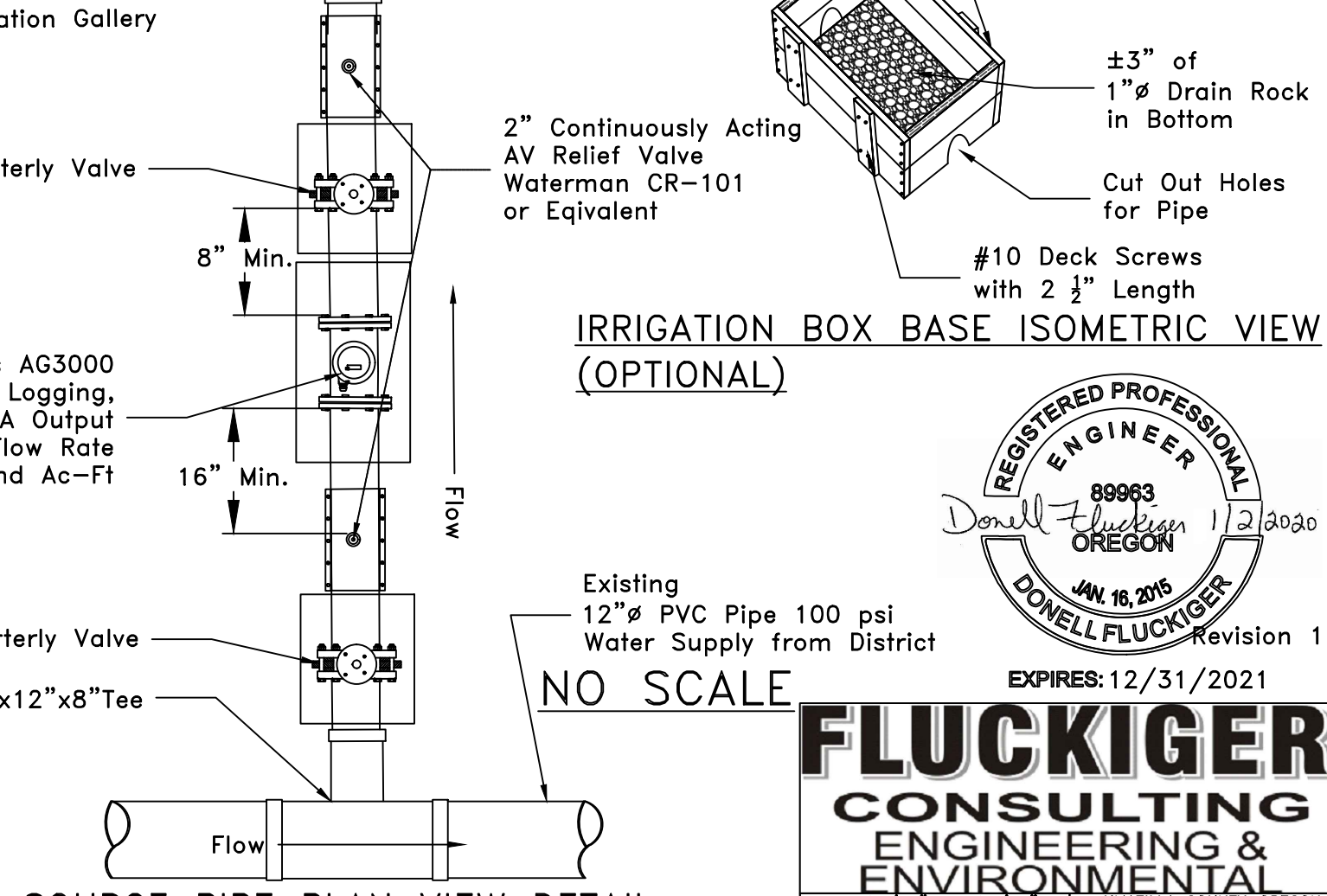
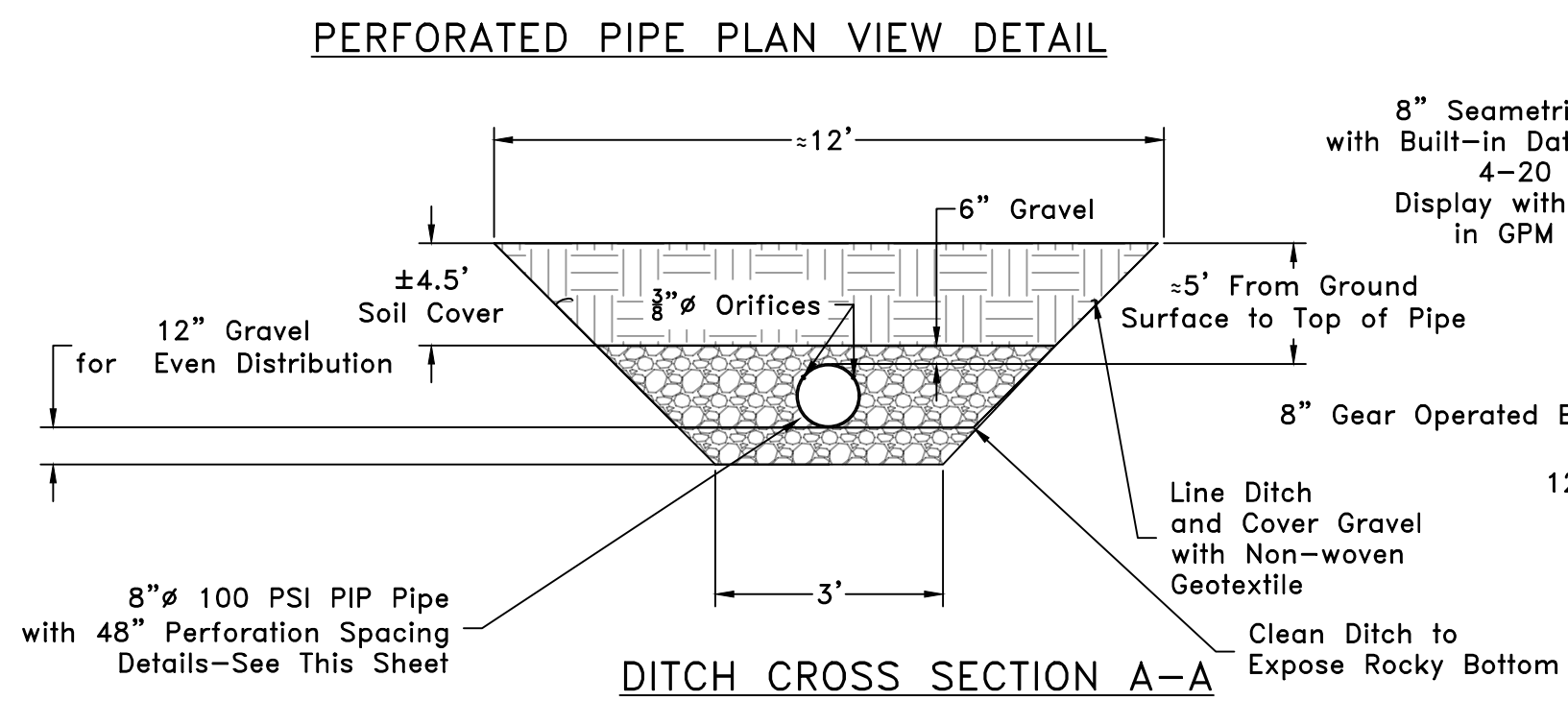
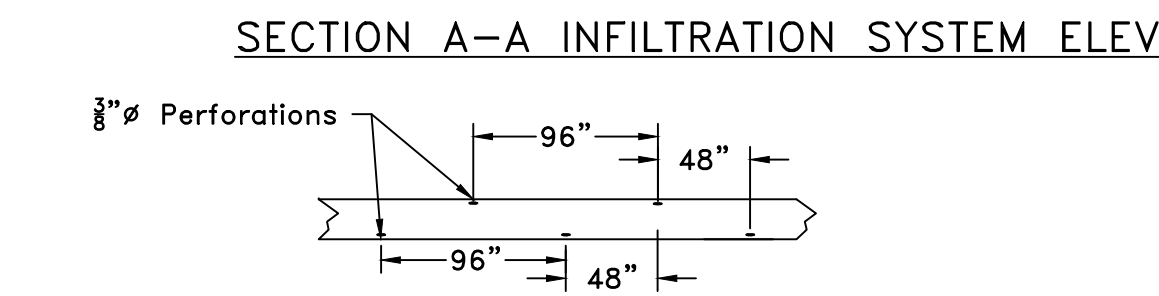
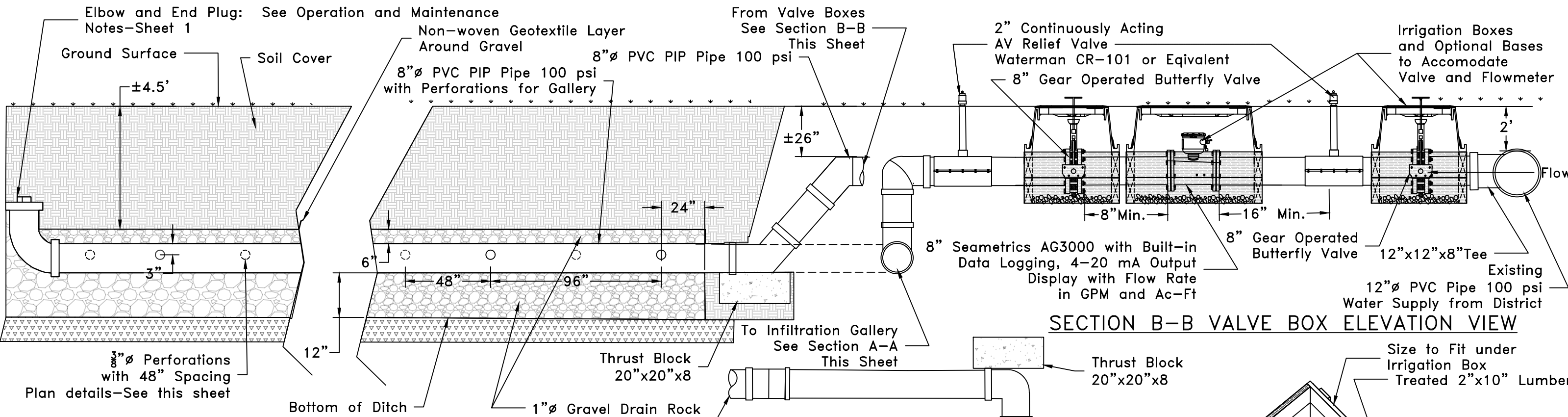
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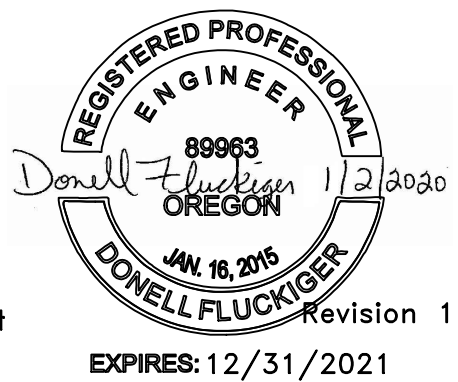
GPS: 45°57'17" N 118°22'47" W UMATILLA COUNTY—OREGON
LEGAL DESCRIPTION: T06N R35E SEC. 36
DWG: WC PROJECTS 2019 SHEET: 2 OF 4



MILLER ROAD AQUIFER RECHARGE SITE - DETAILS SHEET 3 OF 4



NO SCALE

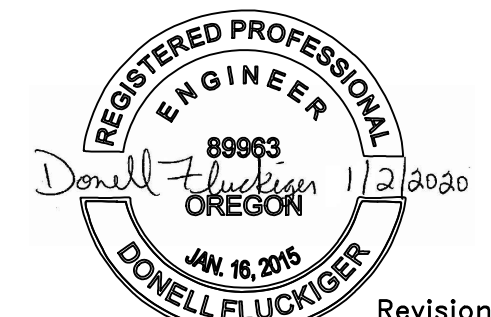


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GPS: 45°57'17"N 118°22'47"W UMATILLA COUNTY-OREGON
LEGAL DESCRIPTION: 106N R35E SEC. 36
DWG: WC PROJECTS 2019 SHEET: 3 OF 4

MILLER ROAD AQUIFER SITE –MATERIALS ESTIMATE SHEET 4 OF 4

Materials Estimate			
Item	Size	Quantity	Description
Perforated Pipe	8 in diameter	360 ft	PVC 100 psi with 3/8" perforations as shown on drawings
Pipe	8 in diameter	17 ft	PVC 100 psi with 3/8" perforations as shown on drawings
AV valve Pipe	8 in diameter	5 ft	PVC 100 psi as shown on drawings
AV Valves and Saddles	2 in	2	Continuously Acting AV Relief Valve and saddle assembly as shown on drawings
Tee	12 in x 12 in x 8 in	1	PVC Tee
Elbow	8 in	1	90° PVC
Elbow	8 in	2	45° PVC
End Plug	8 in	1	PVC
Thrust Block	20 in x 20 in x 8 in	2	Concrete
Geotextile		12,500 sq. ft	Non-woven Meeting AASHTO M288
Drain Gravel	1 in diameter	554 cu. yds	drain gravel
Excavation		680 cu. yds	earth removal
Butterfly Valve and Mounting Kit	8 in	2	Gear Operated with Extension Rod
Flow Meter and Mounting Kit	8 in	1	8" Seametrics AG3000 with Built-in Data Logging, 4-20 mA Output Display with Flow Rate in GPM and Ac-Ft or equivalent
*Irrigation Boxes	29 in x 16 in x 18 in	1	For Flow Meter: Or equivalent box
*Irrigation Boxes	23 in x 13 in x 15 in	2	For Butterfly Valves: Or equivalent box
*Lumber and Deck Screws (Optional)	2 in x 10 in	±40 ft	Treated Lumber and Deck Screws as shown on drawings
*The irrigation boxes and lumber may be substituted with equivalent items meeting the same function			



Revision 1

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